CICINDELA OLIVACEA CHAUDOIR, AN ENDEMIC CUBAN TIGER BEETLE, ESTABLISHED IN THE FLORIDA KEYS (COLEOPTERA: CICINDELIDAE)[1, 2]

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Introduction

Although *Cicindela olivacea* Chaudoir has been collected on the Florida Keys since 1946, it has not been definitely recorded previously from the United States. The species was not listed in the Leng Catalogue or any of its supplements. However, Blackwelder (1944, p. 19) listed it from Cuba and "? U.S.A." Other than this questionable record we have not been able to locate any reference to its occurrence outside the island of Cuba. This study began when Woodruff discovered a specimen in a light trap sample from Grassy Key, Florida, and in an effort to obtain an identification Graves was consulted. We were unable to locate a figure of this species, and a drawing (Fig. 2) is included to aid in its recognition.

Very little information has been published concerning this species. To our knowledge the following is a complete list of references. Chaudoir (1854, p. 118) described the species from Cuba. Chevrolat (1863, p. 185) gave a short description and listed two males in his collection from Cuba without a definite locality. Gundlach (1891, pp. 10-11) gave a brief description with a comparison to *C. tortuosa* Dejean, and mentioned collecting it on the seashore near Havana. Leng and Mutchler (1914, p. 393) merely listed it from Cuba with no additional remarks. The same authors (1916, p. 692) gave a short description based on the works of Chevrolat and Gundlach but indicated that they had not found the species on their expeditions to Cuba.

Redescription of Cicindela Olivacea

Head olivaceous, glabrous except for a pair of ocular setae near each eye; area between eyes rugose, wrinkles becoming confused posteriorly; genae glabrous, rugose; labrum tridentate, teeth prominent, very acute in female and weak, blunt in male (Fig. 1), cream to brown in color, and bearing 4 evenly-spaced erect setae. *Thorax* with pronotal disc rugose, glabrous except for a few white ornamental setae near lateral margins. Proepisternum clothed with white setae. *Elytra* olivaceous, with surface punctate throughout, punctures larger, deeper and denser in basal third, producing a slightly scaly appearance. Punctures show a distinct green reflection.

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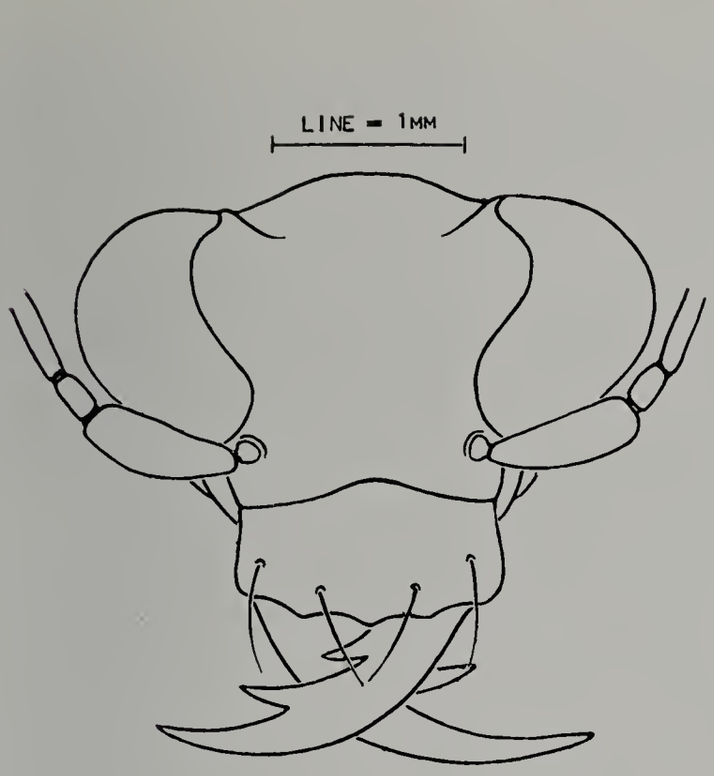
Elytral markings cream-colored, consisting of a simple humeral lunule, an irregular wavy middle band, and an apical lunule (Fig. 2). Marginal line extends anteriorly from middle band and ends in acute point before reaching humeral lunule; posteriorly from middle band it broadens into a bulb. Variation has been noted mainly in middle band and extent of the marginal line. There is a tendency for tip of middle band to be separated in some individuals, forming a dot. In others, middle band resembles a musical note in shape. In one specimen middle band is complete on one elytron and broken, forming a well-defined dot, on other. Leng and Mutchler (1916, p. 689) stated "Elytral markings all separate." This holds true for majority of our specimens, but occasionally marginal line connects with apical lunule. *Abdomen* (except last segment) metallic bronze often with red reflections, clothed on lateral thirds with white setae (although other authors list venter as white, they were misled by these ornamental setae). Last segment non-metallic, brown to testaceous in color, and lacking white setae. *Legs* metallic; bronze, green or olivaceous. Pro- and meso-trochanters with a single subapical seta. All coxae clothed laterally with white setae. Metacoxal disc with single erect seta.

Ecology and Distribution

The following ecological notes are based on a collection of 15 specimens taken at Grassy Key, Florida, by R. E. Woodruff and H. V. Weems, Jr. This area (Figs. 4 and 5) was on the gulf side of the island where the beach was composed of coarse sand, coral and broken shells behind a rocky shoreline of öolitic limestone and fossil coral. *C. olivacea* was first encountered in the rocky area near the water and blended well with the background color. When disturbed, they would occasionally alight on the sandy areas but usually returned to the rocks in a short time. Two other tiger beetles, *C. trifasciata ascendens* Lec. and *C. marginata* Fab., were collected at the same time in equal numbers but predominantly on the sandy beach (Fig. 4). On the rocks (Fig. 5) *C. olivacea* was extremely difficult to capture due to our inability to get the net flush on such an irregularly pitted, sharp surface. Most specimens were collected by our walking along the rocks at the water's edge until a specimen was disturbed and flew to the sandy area where it was easier to capture. Their flight is rapid and erratic, and as in most species of the genus, they seem to have an uncanny knack of avoiding the net. We captured less than 50 per cent of the specimens which were seen.

We examined specimens from the following localities (Fig. 3). FLORIDA: Lower Matacumba [Matecumbe] Key, 12-V-46; Perrin Island, 30-VIII-52 (D. W. Funaro); Crawl Key, 12-VI-58 (J. F. Belshe); Grassy Key, 22-VI-60, mosquito light trap (W. W. Warner); Grassy Key, 12-VI-58 (D. Paulson); Grassy Key, 28-V-62 (R. E. Woodruff and H. V. Weems, Jr.); Stock Island, 1960 (W. W. Warner); West Summerland Key, 14-VI-58 (D. Paulson). CUBA: Pinar del Rio Province, Bah. [Bahia] Honda, 1-3-VI (Wickham); Cabanas, 11-VII-57 (R. S. Howard).

There is little doubt that *C. olivacea* is well established in Florida, especially on Grassy Key where most of the specimens have been collected. Although larvae have not been found, adults have been taken sporadically in the Florida Keys since 1946. This species has been taken in company with the species listed above and in mosquito light traps with *C. severa* Laf. and *C. trifasciata ascendens* Lec. Apparently it is a strong flier and could have been easily introduced on hurricane winds, and since it is a maritime



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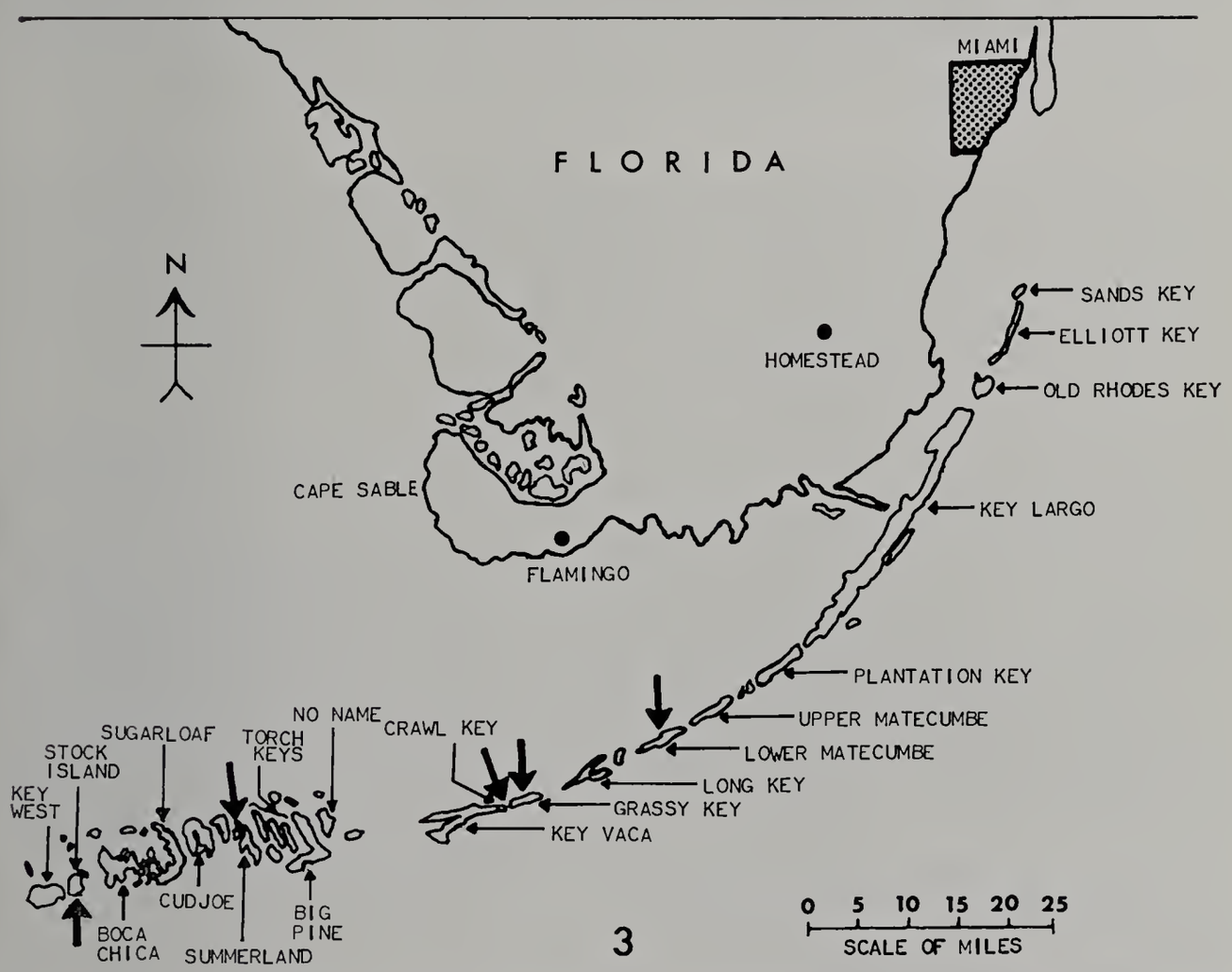

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FIGURES 1-3. *Cicindela olivacea* Chaudoir. 1—Anterior view of head of male, showing labrum. 2—Dorsal view of male (leg setae omitted). 3—Distribution in Florida (enlarged arrows).

FIGURE 4—Habitat of *Cicindela olivacea, marginata,* and *trifasciata ascendens* on Grassy Key, Florida.

FIGURE 5—Rocky area where *Cicindela olivacea* was more abundant on Grassy Key, Florida. (Photographs by R. E. Woodruff.)

species, it could have survived on oceanic drift. It is likely that it is established on Keys other than those we have listed, but it is doubtful that it is presently established on the mainland.

The Perrin Island locality has not been located on the map but is presumably one of the small islands in the Florida Keys. If this assumption is correct, all of the Florida records are in Monroe County. No attempt was made to obtain complete Cuban records, but those listed are both on the coast within 75 miles of Havana. The Entomology Section, Division of Plant Industry, Florida Department of Agriculture, is conducting a survey of the terrestrial arthropods of the Dry Tortugas, the westernmost islands in the chain of Florida Keys and those nearest Cuba. It is interesting to note that, during four intensive collecting trips to this area, no *C. olivacea* were found.

Literature Cited

Blackwelder, R. E.
1939. Fourth supplement 1933 to 1938 (inclusive) to the Leng catalogue of Coleoptera of America, north of Mexico. John D. Sherman, Jr., Mount Vernon, New York. 146 pp.
1944. Checklist of the Coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 1. United States Nat'l. Mus. Bull. 185:1-188.

Blackwelder, R. E., and R. M. Blackwelder.
1948. Fifth supplement 1939-1947 (inclusive) to the Leng catalogue of Coleoptera of America, north of Mexico. John D. Sherman, Jr., Mount Vernon, New York. 87 pp.

Chaudoir, M. de
1854. Memoire sur la famille des carabiques. Part 4. Bull. Soc. Imp. Nat. Moscou [Moskovskoe Obshchestvo Ispytatelei Prirody] 27:112-144, 279-352.

Chevrolat, M. A.
1863. Coléoptères de l'île de Cuba. Notes, synonymies, et descriptions d'espèces nouvelles. Ann. Soc. Ent. France (4th Series) 3:183-210.

Gundlach, J.
1891-1896. Contribución a la entomología Cubana. Parte quinta, Coleópteros. Impr. de Montiel (etc.) Habana, 3:1-404.

Leng, C. W.
1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman, Jr., Mount Vernon, New York. 470 pp.

Leng, C. W., and Mutchler, A. J.
1914. A preliminary list of the Coleoptera of the West Indies as recorded to Jan. 1, 1914. Bull. Am. Mus. Nat. Hist. 33(30):391-493.
1916. Descriptive catalogue of West Indian Cicindelinae. Bull. Am. Mus. Nat. Hist. 35(36):681-699.
1927. Supplement 1919-1924 (inclusive) to catalogue of the Coleoptera of America, north of Mexico. John D. Sherman, Jr., Mount Vernon, New York. 78 pp.
1933. Second and third supplements 1925-1932 (inclusive) to catalogue of the Coleoptera of America, north of Mexico. John D. Sherman, Jr., Mount Vernon, New York. 112 pp.